



July 18, 2008

California **Solar** Initiative Public Forum Hosted by PG&E



California **Solar** Initiative

Program Demand Statistics



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Capacity of CSI Applications

- 49.9 MW Residential
- 201.6 MW Non-Residential
- **251.5 MW Total**
- (78.6 MW Installed)

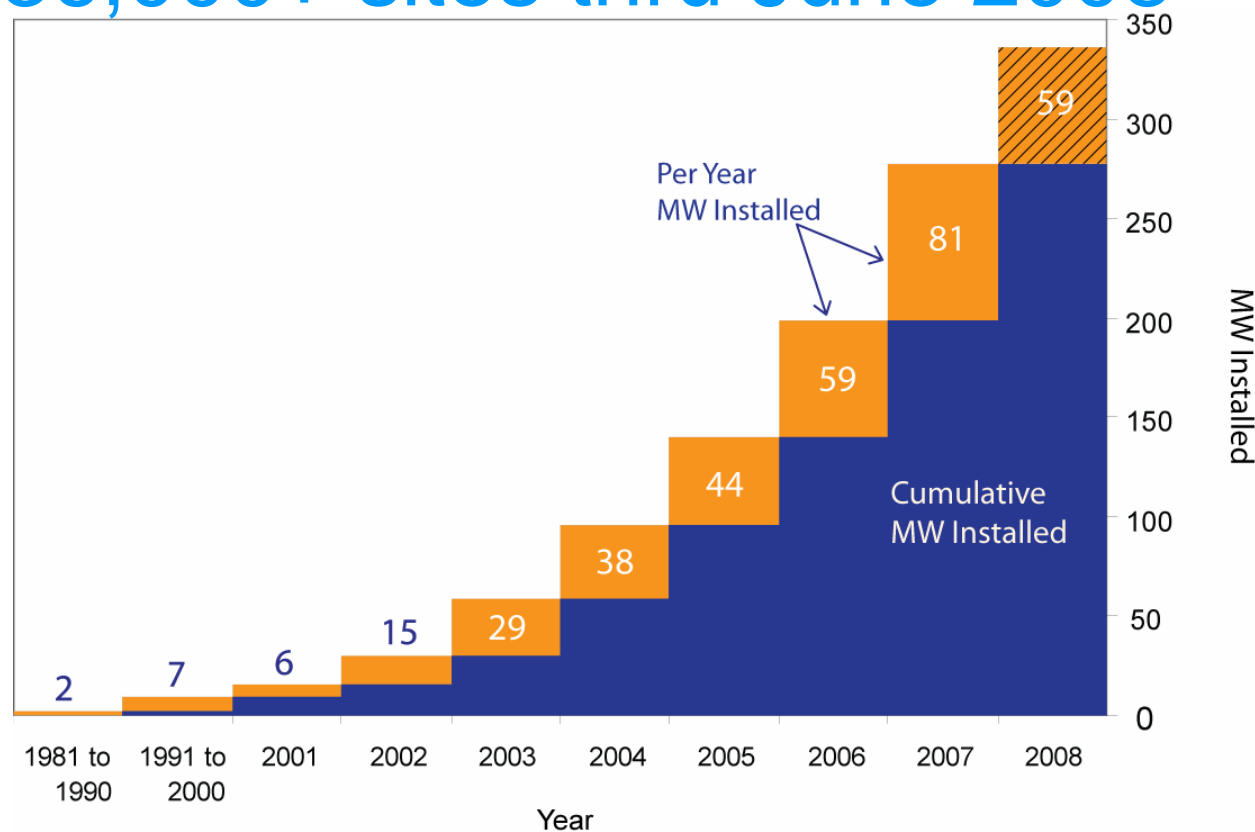
Number of Applications

- 10,511 Residential
- 1,142 Non-Residential
- **11,653 Total**
- (5,735 Completed)

Staff Progress Report available at:
www.gosolarcalifornia.ca.gov/news

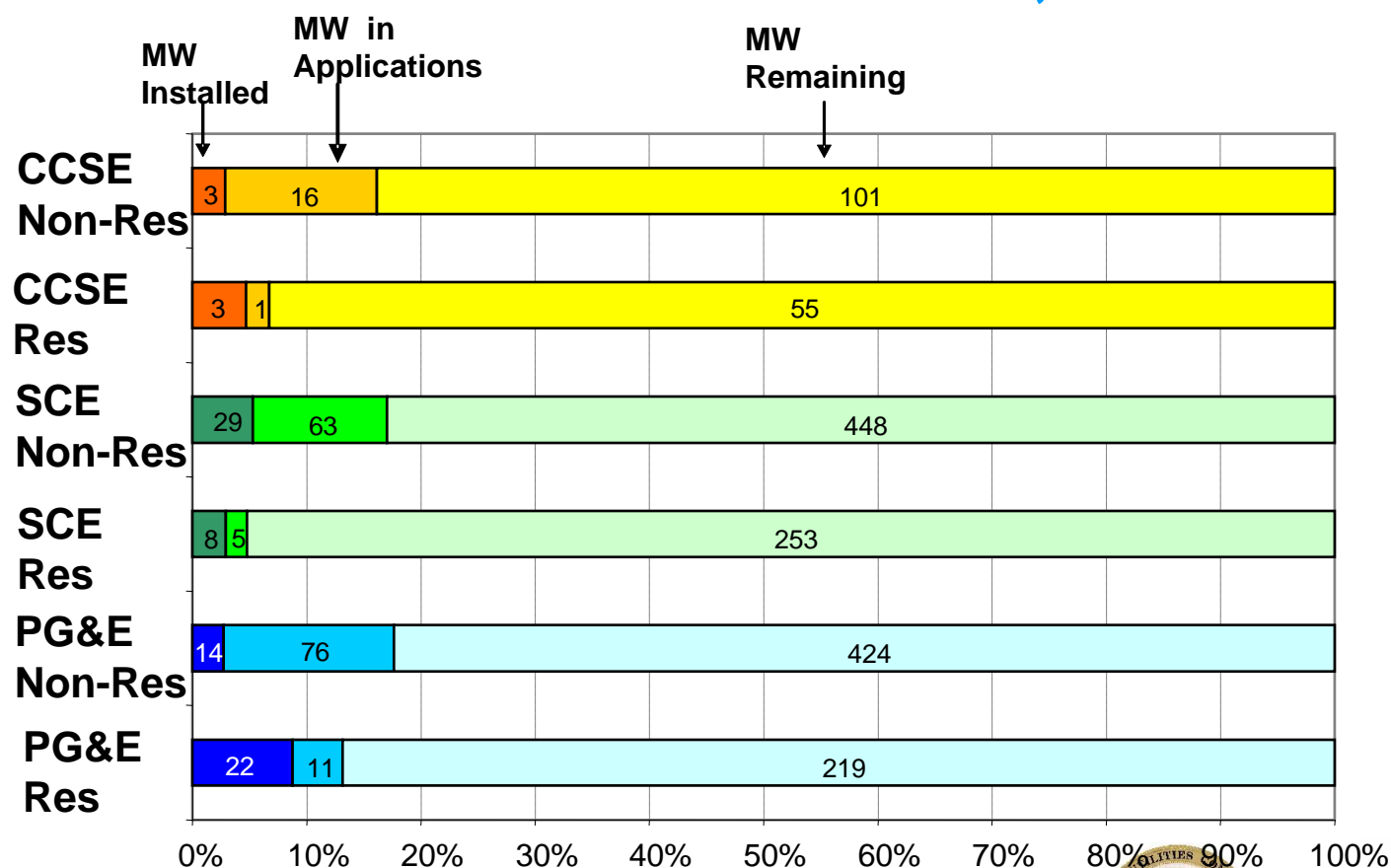
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California installed 339 MW PV at 36,000+ sites thru June 2008



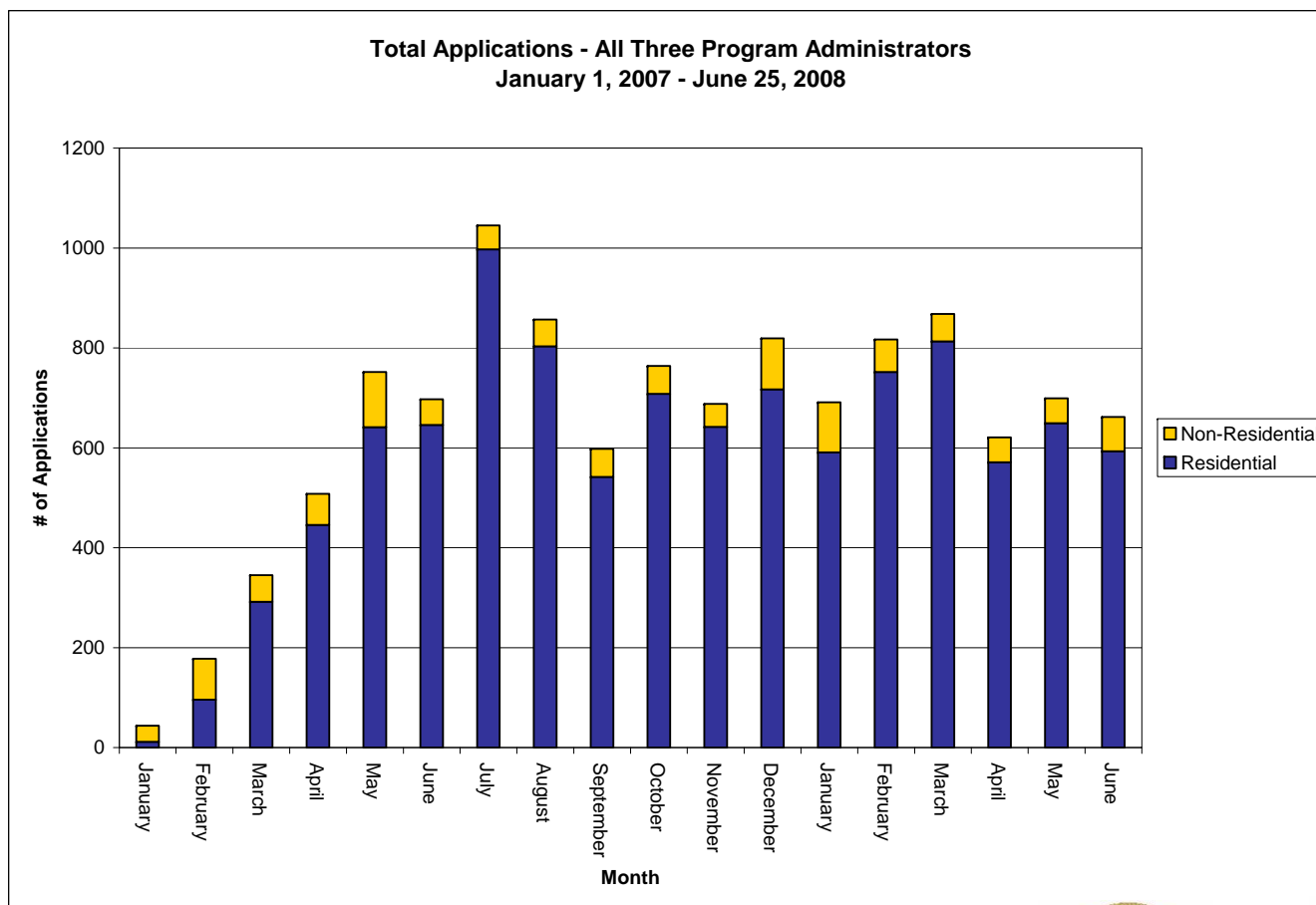
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Making Progress Towards CPUC's 2016 Goal of 1,750 MW



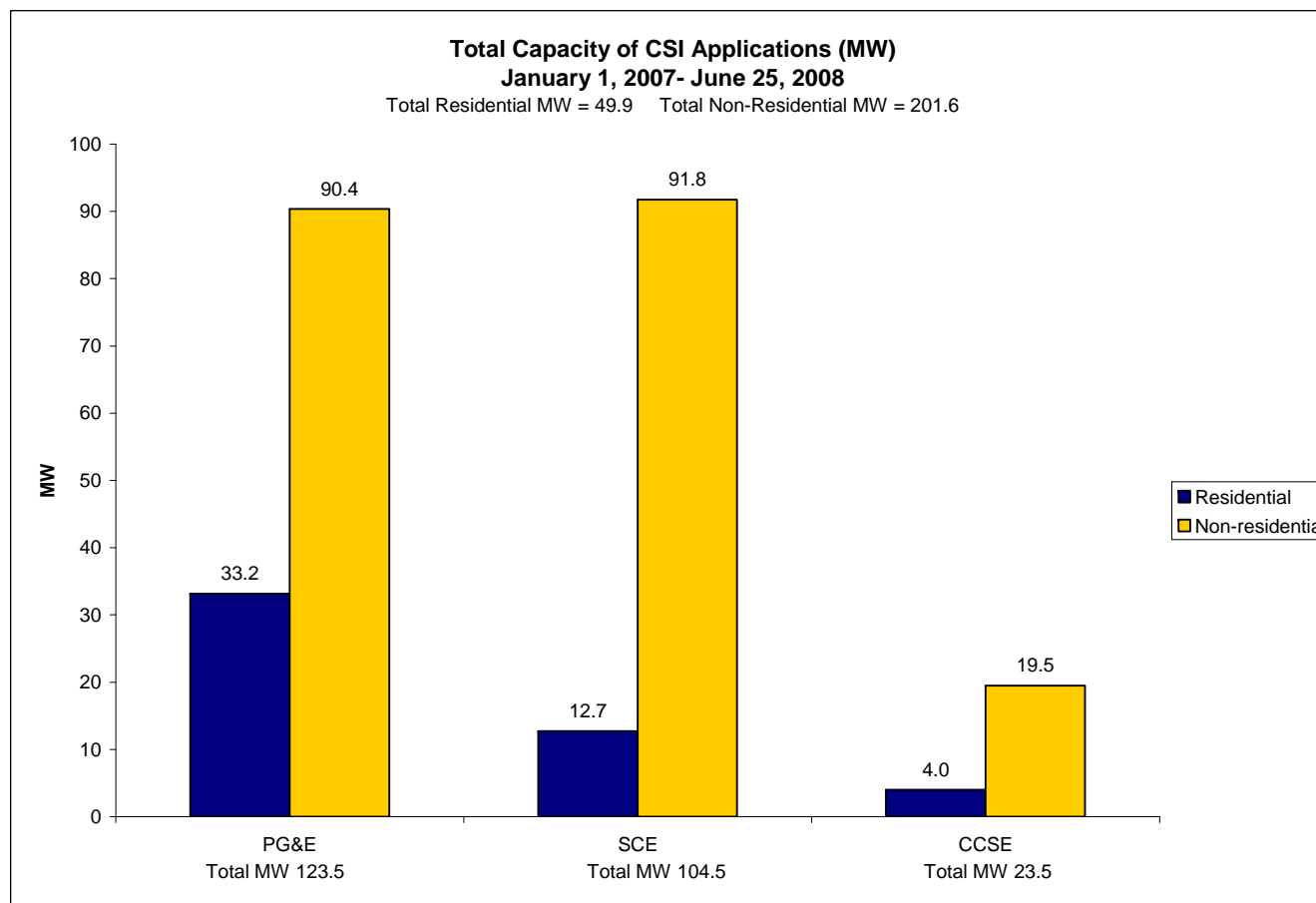
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Applications by Month



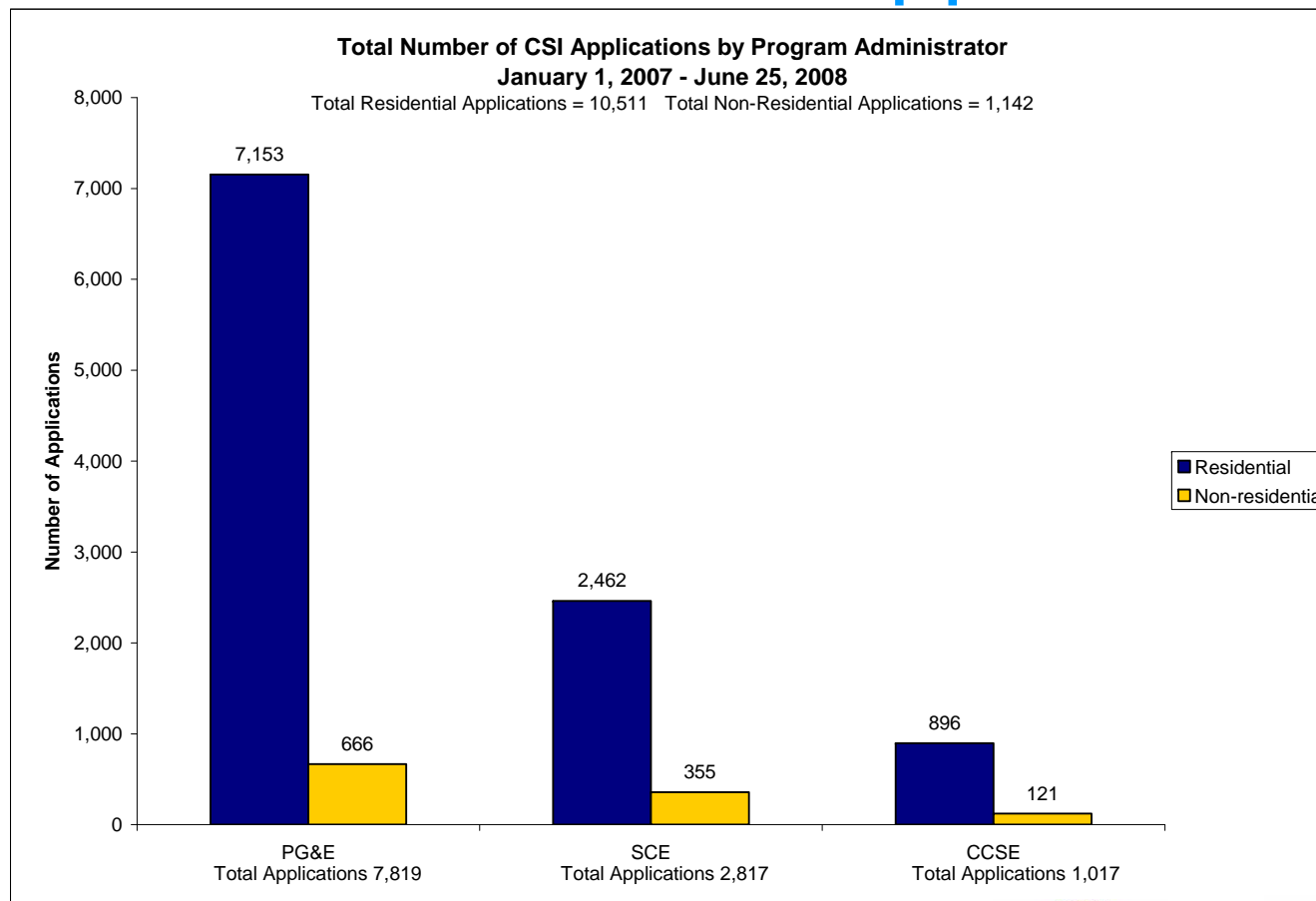
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Total Capacity of Applications



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Total Number of CSI Applications



CSI Database Tool Update



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CSI Database Improvement Projects

- Completed phase I of application and launched new features
 - Improve Stability and transparency
 - Simplify processes
 - Installer comments
- Reporting and Data Subcommittee
 - Consistency in processes
 - Reporting requirements
 - Data integrity
- Potential for enhancements:
 - User interface technology
 - Updates and enhancements



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CSI Database New Features

New Project Statuses

Result: Total of 17 project statuses to improve application transparency

Application Fee Calculation

Result: Calculate Application Fee for non-residential applications to provide accurateness on application fee amount

Calculating Split Incentives

Result: Calculate split incentives to increase accurateness on incentive amounts due to possible split incentive rates



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CSI Database New Features Cont'd

System Sizing Calculation

Result: Re-design system components section to provide clarity and accurateness on calculating system sizing per array

Creating Communications

Result: Generating emails and letters through the db to improve processing efficiency and saving paper

Tracking Due Dates

Result: Displaying project due dates for each application to provide transparency on project status and help with operations



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Improve CSI program data consistency

Data Integrity Measures:

- CSI db not ready so internal systems created
 - Program moved forward but lack of complete data in CSI dB
 - Double entry
- CSI db now completing and stabilized
 - Data consistency needed to be verified AND
 - Previously empty data fields updated
 - Result PAs had to review (automatically in many cases) and update data fields for over 12,000 project records
 - Verifying correct Installer and Seller
 - Calculating split incentives
 - Correcting application due dates

Reporting: Creating internal and external reports that meet customer needs

- New features allowing for more detailed Program analysis



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Potential enhancements: user interface and updates

Create feature to import applications

Goal: Meet customer demand of integrating third party tools with PowerClerk

Create upload feature for document

Goal: Continue to drive toward “paperless” applications

- i.e. EPBB Calculator

Automate payments

Goal: Issue payments even faster



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Future enhancements: user interface and updates

Incorporate New Advice Filings

Goal: Update db with new CSI requirements per approved Advice Filings

Generate Real Time Reporting

Goal: Create real time reports for external customers on Program statistics

Improve user experience

Goal: Get feedback from installer community what other enhancements they are looking for



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CSI db Q&A



Processes – Interconnection, Improvement Projects and New Ideas

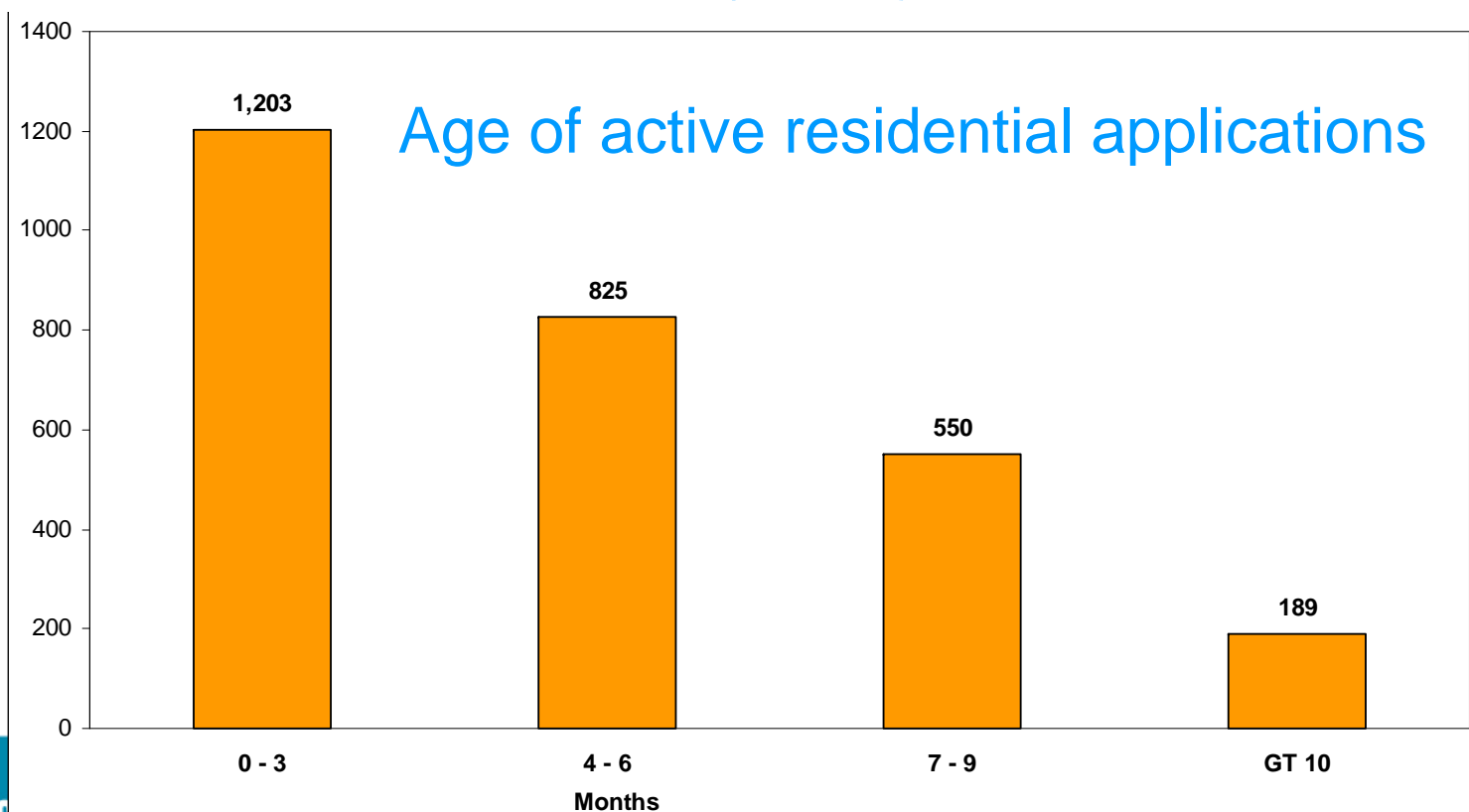
Mark O’Leary, Chuck Hornbrook and Bob Botkin
and John Supp



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The volume is coming in residential.....

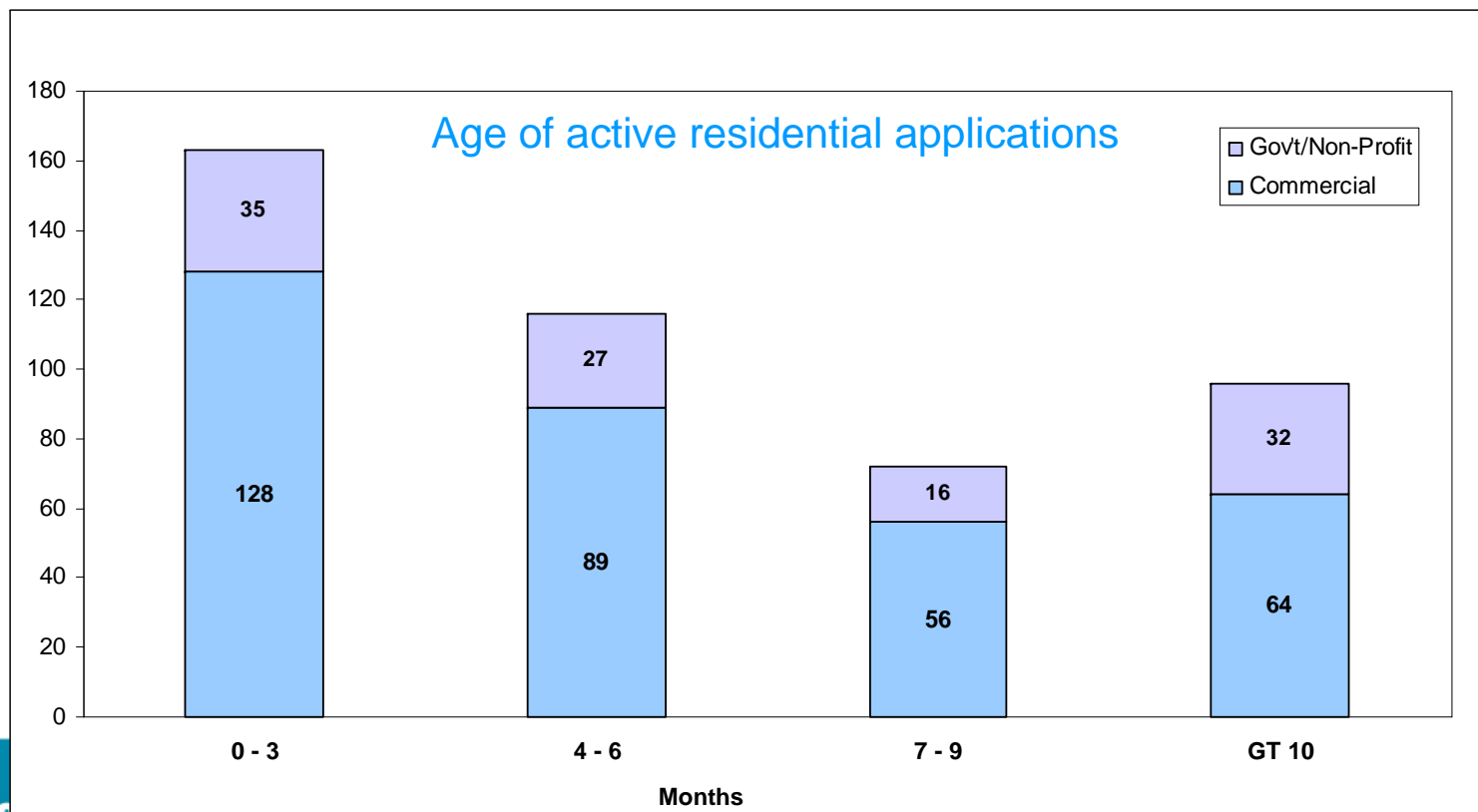
Assume all of these (2,578) plus an additional ~1,203 will be looking to be completed prior to the end of 2008 (3,781)



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And in commercial.....

Assume all of these (447) will be looking to be completed prior to the end of 2008



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What can you do?

- Submit the interconnection applications now
 - Helps get into engineering review sooner
 - Determine if equipment or work is needed prior to successful interconnection
 - Avoids last minute “gotchas!”
- Identify any problems you see that may be unique that would impact interconnection
 - Dogs
 - Construction



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Questions?



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Process Analysis and Improvements



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Updates to CSI EPBB Calculator

- Unannounced changes to the EPBB Calculator can cause confusion and uncertainty in the marketplace
- PAs are committed to a transparent communication process regarding these changes:
 - Dates for changes announced with due notice
 - Notification through all CSI communication outlets (i.e. Program Administrators Websites, Powerclerk, EPBB Calculator, email blasts, etc....)
 - A trial period will allow user familiarization before new calculator is required



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PG&E Six Sigma Analysis Project

- Determine time for application processing
- Identify bottlenecks
- Opportunities to streamline internal processes and external processes
- Determine proper staffing and IT priorities



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Initial Finding of Six Sigma Project

- Reservations
 - ~80% file complete at first pass
 - Complete reservation on average 12 days
 - Missing reservation on average take 39 days
- Incentive claim form
 - ~20% file complete at first pass
 - Complete form on average takes 8 days
 - Missing form takes on average 33 days
 - Payment still needs to take place



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What is missing on ICF

Those applications that
were over the median –
what was missing?

Item	% Missing
Missing Interconnection (PTO) ²	36.47%
PMRS	31.76%
EPBB Tool Discrepancy	27.06%
10 year warranty	17.65%
Final Project Cost Breakdown Worksheet	12.94%
Final Project Cost Affidavit	10.59%
Incentive Claim Form Missing & Signature	2.35%
Tax Payer ID	1.18%
3rd Party Reassignment Form	1.18%

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Actions

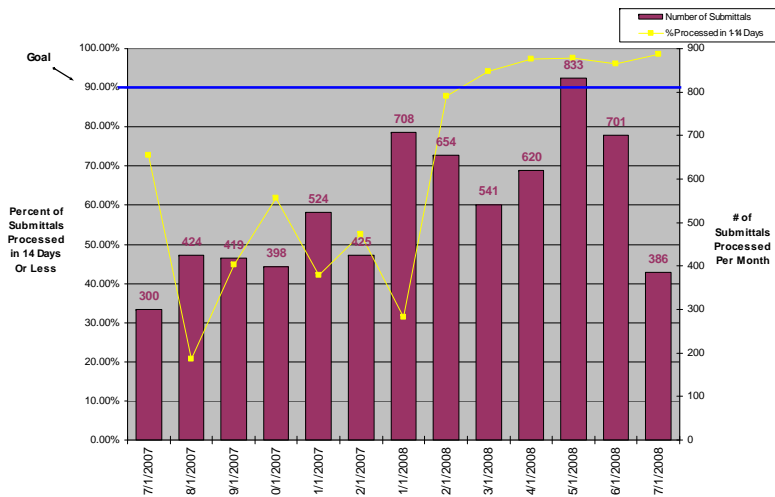
- Installers, remember the checklist
- Communication loop with our interconnection team
- 10-year warranty simplification (upcoming advice letter)
- Training and education
 - On-line training tool development
 - EPBB tool mini-session?



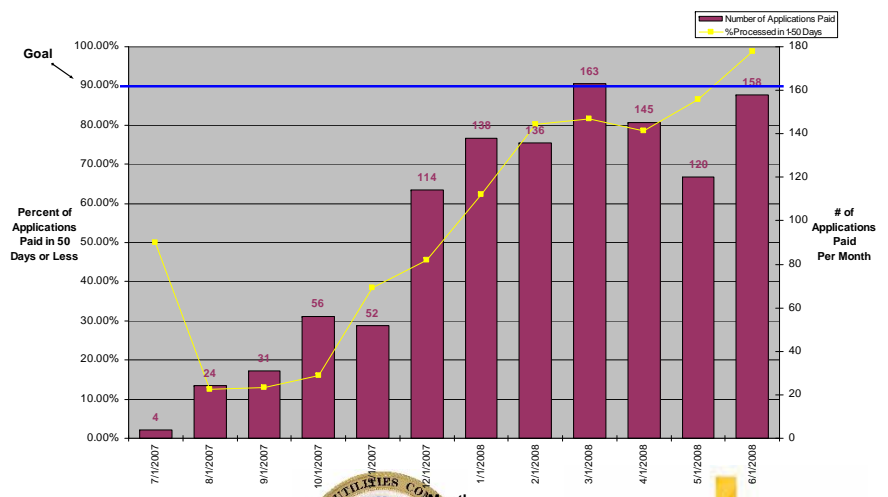
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SCE Application Processing

Monthly Trend of CSI
Submittal 14-Day
Processing Goal
(as of 7/11/08)



Monthly Trend of CSI
Payment (50-Day)
Processing Goal
(as of 7/11/08)



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Most Common Issues with Applications

Missing Item	Application Phase		
	RR	PPA	ICF
1. Energy efficiency audit	X		
2. Retailer not CEC-approved (must register every year by March 31)	X		X
3. Incentive Claim Form, Project Cost Affidavit, Final Project Cost Breakdown Worksheet do not match EPBB Tool Calculator Printout			X
4. Interconnection approval pending			X
5. Copy of executed contract for system purchase and installation		X	
6. Warranty language does not meet CSI Handbook requirements	X		
7. If warranty on separate document, it must be signed by Installer	X	X	X
8. Equipment clarification – PPA/ICF does not match RR submittal; change in installed equipment no longer matches EPBB calculator		X	X
9. Copy of executed PMRS contract or cost cap exemption documentation			X
10. Missing signatures	X		
11. Installer does not have current license	X		



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SCE Actions to Reduce Processing Times

- Contact Applicants about missing items
 - Reduces suspensions and processing time
- Email Applicant review letters (in addition to regular mail)
- To reduce lag in customer response, we use two-day mail
- Training and education
 - Help solar community understand issues



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SCE Solar Customer Process Re-Engineering Project

- **Project Objectives**
 - Streamline SCE's end-to-end solar process from the customer perspective by identifying and implementing improvements
- **Deliverables/Outcomes**
 - Develop a comprehensive analysis of end-to-end solar process
 - Identify gaps and improvements
 - Holistic approach - people, process, technology, organization
 - Develop "to-be" processes with both short and long term improvements
 - Implement plan
 - Communicate findings and results to stakeholders
- **Project Approach**
 - Three key phases:
 1. Verify "as-is" – July '08
 2. Design "to-be" – October '08
 3. Implement changes – January '09



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New Processes



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1-Step Application Process for Residential Projects – Proposal looking for feedback

- Most residential projects completed within 60 days
- Proposal: 1-Step process for residential projects only
 - Benefits to marketplace:
 - Streamlines Application and Incentive Claim steps into one
 - Eliminates duplication – no more resizing, re-doing EPBB calculation, back-and-forth on these issues, etc....
 - Allows installers to focus cash flow on sales, marketing and product rather than rebate administration
 - Minimizes split incentives; facilitates Trigger Tracker accuracy
 - Benefits to Rate Payers
 - Less complex process means lower administration costs
 - Eliminates administration burden of reviewing projects twice
 - As MW goals increase and incentives decrease, incentive process must be aligned with Program Administration budgets



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1-Step Application Process for Residential Projects - Caveats

- Transition period for the industry
 - Proper notification to the marketplace by CSI PAs will be necessary for effective transition
 - Allow for projects in Trigger Tracker to be effectively accounted for, prior to implementation
- Application quality will be even more critical
 - “Getting it right the first time” will be of utmost importance as installers will have one shot at installing a CSI eligible system
- Comments?



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Integrated Programs and Strategies: Focus on the Customer – Delivering Solutions 2009-2011 and Beyond

Elizabeth T. Lowe



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Directives for Integration

CPUC Goals for Integration

- The CPUC's directed the utilities in 2007 to integrate, coordinate and innovate in order to provide more comprehensive solutions to customers
- PG&E is working across all applicable proceedings and delivery channels to ensure a success of this directive and approach

Strategic Plan Goals for Integration

- All energy and resources efficiency messages, programs and initiatives in California will be, as appropriate, coordinated and/or integrated across the full range of demand side management options to increase the penetration of energy efficiency and to avoid lost opportunities.



California ~~Integrated Program~~ Solar Initiative Offerings

PG&E will be offering integrated programs and services through multiple marketing strategies and delivery channels

PG&E plans to leverage the relationships of delivery channels focused on particular market segments to serve our customers most effectively

Delivery channels will include:

- Core utility programs and messaging
- Utility service and sales staff
- Equipment vendors, installers and contractors
- Third Party contractors
- Local Government partnerships

Program bundles can include offerings from:

- Energy Efficiency
- Demand Response
- Solar and Distributed Generation Options
- Water Efficiency (if applicable)
- ClimateSmart (if applicable)
- AMI / SmartMeter (if applicable)
- Low Income (if applicable)



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Integrated Case Study – Sonoma State University

- Over the past decade, SSU has saved 2.6 million kWh of electricity (approximately \$350,000), 1400 peak kW of demand reduction and received nearly \$800,000 in incentives
- SSU has implemented a set of measures that combine:
 - Energy Conservation
 - Energy Efficiency
 - Time-of-Use Management
 - Demand Response and
 - Self-Generation
- SSU Measures:
 - Energy Management Systems (EC/EE/TOU)
 - Radiant Floor Heating (EC)
 - Upgraded Lighting and Daylighting (EE)
 - Innovative HVAC Systems (EE)
 - Rooftop PV System
 - Demand Response Program—agree to 250 kW of load reduction
 - Thermal Energy Storage



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2008 Integrated Activities

- PG&E is pursuing Integrated offerings to customers in 2008 and beyond
- We have examples of near term integrated approaches and opportunities in the following sectors:
 - Commercial Office Buildings
 - Ag and Food Processing
 - Retail
 - Healthcare
 - Residential New Construction
 - Local Government
- These activities will ultimately integrate multiple offerings including EE, DR, Solar and DG, LIEE, ClimateSmart, Emerging Technologies and SmartMeter AND
- Will be offered through multiple delivery channels including core programs, third parties and local government partnerships
- PG&E is looking for more opportunities to “show case” integrated activities and success stories



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PG&E's RNC and CEC's NSHP Program Integration Pilot

- The NSHP has a goal to create a self-sustaining market for solar homes where builders incorporate high levels of EE when building new solar homes
- PG&E will be assisting the CEC in administering the NSHP in PG&E's service territory
- Builders participating in NSHP are encouraged to participate in the RNC EE program first in order to leverage EE incentives and to meeting the loading order of the Energy Action Plan
- Target Customers
 - New Solar Homes Program and Residential New Construction – same (res builders/developers/custom homes owners)
- Goal
 - Encourage high levels of energy efficiency when building new homes
 - Aligned with loading order of the state's Energy Action Plan (EAP)



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Local Government - Green Cities Pilot

- Proposed 2008 Pilot
 - Integrate marketing materials and approach to governments to include multiple offerings and programs
 - Integration of Low Income Energy Efficiency offerings and ClimateSmart will be key parts of these strategies
 - Cross train PG&E staff on Sustainability messaging and opportunities for PG&E “green” services
 - Consider tools for roll out in 2009 that will help with delivering energy use data to local governments for GHG inventories and energy plan development
- 2009 Follow up and Consistency with Strategic Plan
 - Green Communities offerings will be proposed in the 09-11 EE filing.
 - Pending CPUC approval, an expanded Green Cities program will increase demand for integrated service delivery within green communities



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Zero Net Energy Pilots

- As part of its EE Application, PG&E proposes a new ZNE Pilot
 - Supports the goal of achieving ZNE in all residential buildings by 2020 and all new commercial buildings by 2030.
- PG&E's Emerging Technologies and SmartMeter teams are proposing a ZNE Demonstration Home and training facility as a one-stop solution for testing the performance of integrated ZNE measures:
 - **A modular design** to enable researchers to evaluate multiple versions of the same technology in a home-like setting;
 - **Instrumentation** to enable better understanding of how integrated sets of measures—such as energy efficiency equipment, IDSM tools, renewable generation, and DR strategies—perform together;
 - **A HAN-enabled SmartMeter** to demonstrate the role of communications and control in achieving the ZNE goal;
 - **Special events and public access** to the ZNE Home at specially designated times to showcase the ZNE concept and tools;
 - **A training and education center** next to the home—featuring displays linked to the instrumentation in the home and hands-on technical courses—to familiarize market players with ZNE products.



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Next Steps to Successful Integration

- PG&E is looking to partners in vendors and contractors to help us integrate projects
- Equipment vendors and installers can help identify opportunities and bring more value to customers by offering comprehensive offerings
- PG&E is here to help:
 - We can offer education and training – on how comprehensive solutions that include energy efficiency, demand response and solar can bring the optimal results AND on Pilot projects
 - We can offer technical support – on all kinds of integrated demand side installations
 - We can offer audit support – On site Integrated Audits for large customers and other tools for smaller customers – to identify the scope of opportunities
 - We can offer incentives – for energy efficiency, demand response and solar installations



Advice Letter Filling



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- Standardize Application Fee Amount
- Remove the word letter
- Amend inspection requirements
- Remove the definition of a strike
- Modify warranty Requirement
- Remove requirements for installer to register with the PAs and sellers to register with the CEC
- House keeping
 - Change PG&E address
 - Eliminate redundancies
- Host customer can transfer to another site



July 18, 2008

California Solar Initiative SB 1 Guidelines Update



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SB 1 Guidelines – non-EE Update (2009 requirements)

- Current SB 1 Guidelines require modifications by 2009 to following elements of CSI Program:
 - Incentive Calculator
 - EPBB calculator does not meet 15 requirements in SB 1 Guidelines (see following slide for 15 requirements)
 - Shading Measurement
 - CSI Program's current shading measurement requirements do not comply with SB 1 Requirements
 - SB 1 Guidelines requires per string measurement of shading impacts
 - Different definition of minimal shading
 - SB 1 requires documentation of tree species and potential future developments which may become shading impacts
 - System Verification
 - SB 1 Guidelines mandates PV installer conduct field verification (CSI Program currently has no such requirement)



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SB 1 Guidelines – non-EE update: calculator requirements

The SB 1 Guidelines require the following 15 features from an incentive calculator:

1. ...**fixed flat plate collector** technologies at a minimum
2. Use hourly weather data for one of the **16 climate zones** in California, ...
3. ...**azimuth and tilt angle** of the installation
4. ...**detailed performance characteristics data for modules**
5. ...determine the operating voltage of a system at a given hour - number of **modules in series strings and the number of strings in parallel**.
6. ...**mounting offset of the array** from a surface below to assess the change in operating temperature (Normal Operating Cell Temperature - **NOCT** impact).
7. Account for the **height above the ground** that the array is mounted, to capture the **impact of wind speed** on the module operating temperature.
8. ...use **detailed performance data for inverters**...
9. **Limit the production of the system** based on the size and voltage of the array and inverter voltage and power capacity.
10. Generate **hourly estimates** of PV production for the entire year
11. Determine the **solar position** for each hour of the year in terms of altitude and azimuth.
12. Determine the **hourly impact of shading** on each string
13. Report the effective hourly production values for the entire year after factoring the impact of shading and applying the appropriate **TDV multipliers** for the climate zone and building type
14. Generate a performance verification table...
15. Generate a **Certificate of Compliance**



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SB 1 Guidelines – non-EE update: proposed modifications

- CSI PAs and CPUC have assessed how current SB 1 Guidelines requirements would modify CSI Program
 - CSI PAs/CPUC have suggested following modifications to SB 1 Guidelines (goal of modifications is to minimize market disruptions associated with changes to CSI Program):
 - Removal of calculator requirement that shading be measured “on every string”
 - Addition of 5% incentive calculation tolerance
 - Addition of alternate definition of minimal shading (based upon availability of system, instead of distance/height)
 - Modification of installer field verification requirements



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SB 1 Guidelines – non-EE update: next steps

- CEC is currently assessing CSI PAs/CPUC proposed modifications
- CEC will post draft SB 1 Guidelines in late August/early September
- Once SB 1 Guidelines are finalized, CSI PAs/CPUC will modify EPBB Calculator and CSI Handbook accordingly
 - Modifications to CSI Program will comply with SB 1 Guidelines, but CSI PAs/CPUC are working to minimize the programmatic disruptions associated with changes



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Claudia Orlando
Buildings and Appliances Office
CSI Public Forum
July 18, 2008



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Proposed Draft Schedule

- Post Draft late August- early September
- Workshop in September
- Review Comments and finalize document
- Adopt in October or early November



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Areas to Update

- Substantive Changes
- Non Substantive Changes



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Substantive Changes

- Random audits, operational performance
- Non flat plate PV definition and component standards
- Shading – ease of measurement
- Tolerance – incentive application, claim and field verification values



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Substantive Changes (cont.)

- Alternate protocols for installer system inspection
- New construction Tier I and Tier II analysis
- Benchmarking



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Non Substantive Changes

- Clarifications
- Definitions
- Updates – Go Solar Website footnotes, CSI metering workgroup



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Regulatory Updates



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Single-Family Low-Income Program

Established by Commission decision November 2007, \$108 million budget
Provides fully subsidized 1kW systems to applicants who qualify
Provides higher incentives to other low income households, according to tax liability:

Federal Tax Liability	CARE-Eligible (\$ / W)	Not CARE Eligible
\$0	\$7.00	\$5.75
\$1 - \$1,000	\$6.50	\$5.25
\$1,001 - \$2,000	\$6.00	\$4.75

- CPUC has received bids for the statewide Program Manager, and is in the process of selecting the winning bidder
- Incentives will not be available until after the Program Manager is selected



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Multifamily Low Income Program

- \$108 million Multifamily Program is currently under development
- Program Administrators filed a proposal in 2007
 - A workshop was held August 2007
 - CPUC considered the proposal
- February 29, 2008: Energy Division staff issued a proposal on the program
 - A workshop was held in March 2008
 - Comments and reply comments on the staff proposal were filed in late March and early April
- The CPUC is currently considering comments
- Next step is a proposed decision issued for comment



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CSI Measurement and Evaluation Plan

- Energy Division Issued a Staff Proposal for the Measurement and Evaluation (M&E) Plan on May 30, 2008
 - Draft M&E Plan includes three main elements 1) Quarterly Progress Reports; 2) Evaluation Reports; and 3) Annual Program Assessments
 - Draft M&E Plan proposes total budget of \$46.7 million for life of CSI Program
- CPUC has received comments on the draft M&E Plan and is considering next steps



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Energy Efficiency Requirements

- CPUC has issued an Assigned Commissioner Ruling (ACR) on CSI EE requirements (April 21, 2008)
 - ACR included two potential options for the energy efficiency requirement
 - Option A) enhanced audit
 - Option B) installation of EE measure
 - Comments to Ruling were received, and CPUC is considering record



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CSI Metering Requirements

- On July 1, 2008 Energy Division released a workshop report covering performance data providers (PDP) protocols workshops
 - Per D.08-01-030, the CSI PAs must file a PDP protocol requirement by Advice Letter within 30 days of the release of the above workshop report
 - Final PDP protocol will then be considered by the CPUC for adoption in the CSI Program Handbook



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CSI Research, Development and Deployment (RD&D) Program

CSI RD&D Program:

- \$50,000,000 budget
- CSI RD&D is a portfolio based grant-making program that focuses on overcoming technological barriers to the widespread adoption of solar distributed generation

RD&D Program progress to-date and timeline:

- **April 1, 2008:** RD&D Program Manager RFP released
- **April 22, 2008:** Bidders must file intent to bid
- **April 28, 2008:** Bidders' Conference at the CPUC
- **May 20, 2008:** Proposals Due
- **June 31, 2008:** Draft Resolution issued with notification of Energy Division's proposed selection of Itron Inc. as CSI RD&D Program Manager
- Next steps:
 - Finalize RD&D grant-making strategy (**Q3/Q4 of 2008**)
 - Stakeholder meeting (**Q3/Q4 of 2008**)
 - First RD&D grant RFP released (**Q4 2008/Q1 2009**)

note that all above dates are targets not set deadlines



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Solar Water Heating Pilot Program

- On April 3, 2008, CCSE and CalSEIA jointly filed a petition to modify the SWH Pilot Program which sought to:
 - 1) expand the pilot Statewide;
 - 2) extend the pilot through 2009
 - 3) Increase the scope of M&E to include all Ca. SWH market;
 - 4) make new construction projects eligible for SWH incentives
- On 06/26/08, CPUC issued D.08-06-029 which partly granted the petition to modify
 - D. 08-06-029 allowed for an extension of the Pilot into 2009; increased the scope of M&E; and allowed new construction projects to be eligible for SWH incentives
- A Public Workshop is scheduled for August 26 at the CPUC to discuss the evaluation of the SWH Pilot Program

